federal register

Wednesday
December 24, 1980

Part V

Environmental Protection Agency

Testing Requirements for the Specification of Disposal Sites for Dredged or Fill Material

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 230

[WH-FRL 1647-6]

Testing Requirements for the Specification of Disposal Sites for Dredged or Fill Material

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule.

SUMMARY: This proposed rule revises the testing requirements in the section 404(b)(1) Guidelines for the Specification of Disposal Sites for Dredged and Fill Material under section 404 of the Clean Water Act.

The testing requirements in the Guidelines are being revised because on September 18, 1979, when the Guidelines were proposed, EPA and the Corps of Engineers had not completed revisions on the testing portion and sought comments on the remainder of the Guidelines only at that time.

The revised testing section is intended to reconcile the need for simplicity and ease of application of the testing procedures on the one hand with the need for sufficient information to identify potential adverse effects on the environment on the other hand.

DATE: All comments received on or before February 6, 1981, will be considered.

ADDRESSES: Send written comments to: Joseph Krivak, Criteria and Standards Division, Office of Water and Waste Management, (WH-585), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460. Each person submitting a comment should include his or her name and address and give reasons for any recommendations. A copy of all public comments will be available for inspection and copying at the EPA Public Information Reference Unit, Room 2922 (EPA Library), 401 M Street, S.W., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT: Joseph Krivak, 202-755-0100.

SUPPLEMENTARY INFORMATION:

Background

The section 404 program was established by the Federal Water Pollution Control Act of 1972 (FWPCA) to regulate the discharge of dredged or fill material into waters of the United States. The Secretary of the Army, acting through the Chief of Engineers, and States with programs which have been approved by EPA are authorized to issue permits specifying sites for the discharge of dredged or fill material. Sites are to be specified through the application of guidelines developed by EPA in conjunction with the Secretary (the 404(b)(1) Guidelines).

EPA published Interim Final 404(b)(1) Guidelines on September 5, 1975, which, *inter alia,* provided for certain testing procedures to provide information to be used in the permit decision. Since then, both the passage of the 1977 Amendments to the FWPCA and the experience of EPA and the Corps of Engineers in applying the Guidelines prompted EPA to develop proposed revisions to the Guidelines, which were published in the **Federal Register** on September 18, 1979. Because EPA and the Corps had not at that time completed revisions to the testing portions of the Guidelines, but did not want to delay revisions to the rest of the Guidelines, the September 18, 1979 proposal retained the 1975 testing provisions (with certain non-substantive editing changes) and sought comments on the remainder of the Guidelines only. A final rule reflecting public comments but retaining the old testing provisions (now appearing in §§ 230.60 and 230.61) is being published elsewhere in today's **Federal Register.**

EPA and the Corps have now completed a proposed testing package. After the comment period, we will consider the comments and make appropriate changes in the testing provisions. Then final testing provisions will replace §§ 230.60 and 230.61 as they appear in today's final section 404(b)(1) Guidelines. We are not planning any other changes in the Guidelines apart from those necessary to accommodate the new testing package. While we believe that it will not be necessary to change the regulations substantively to accommodate the new testing procedures, we solicit comments on this point.

The Corps of Engineers has played a major role in developing today's proposed rule. This draft was revised to reflect the comments of Corps and EPA employees with experience sith the permitting process and with the technical and scientific issues involved.

Purpose and Content of the Revised Testing Section

Under the 404(b)(1) Guidelines, a discharge may not take place if the permitting authority finds, among other things, that the discharge will have unacceptable adverse effects or that practical steps have not been taken to minimize adverse impacts (§ 230.10). In order to determine whether these requirements have been met in a particular case, the permitting authority must consider the factors set out in the Guidelines, in light of the particular facts involved. The testing procedures are designed to provide some of the information to be used in making determinations concerning the potential impacts of a particular proposed discharge. Where the circumstances indicate that testing is not likely to provide useful information, the regulation allows the permit decision to be made without testing. We have attempted in this way to reconcile our desire for simplicity and ease of application of the testing procedures on the one hand with the need for sufficient information to identify potential adverse effects on the other hand.

Section-by-Section Summary*

Proposed § 230.60 explains the purpose of testing and sets out general information pertaining to testing. It is our intent to minimize the testing burden, consistent with the need for the permitting authority to make an informed judgment about the potential impacts of a discharge. Thus, this section provides that results of previous tests may be used in appropriate circumstances.

In addition, under § 230.61, tests to evaluate the impacts of contaminants are required only when there is reason to believe that contaminants are present. We have proposed that the trigger be the presence of such contaminants "above background levels." Section 230.61(a) identifies factors which should be considered in this "reason to believe" test (or "initial evaluation," as it is sometimes called). Comments are sought on the adequacy of this list of factors.

Section 230.62 sets out specific testing requirements. These requirements are organized by "category" of discharge. In order to determine which requirements apply to particular discharges, we have constructed categories of discharges, based on the initial evaluation, to reflect different potentials for adverse impacts on the aquatic ecosystem. Comments are sought on the appropriateness of the proposed categories for this purpose. The specific tests required for particular categories are based on the severity of potential impacts.

When there is no reason to believe that dredged material is contaminated, it falls into Category 1, and no contaminant-related testing is required. Category 2 includes dredged material which, while possibly contaminated, probably is not significantly more contaminated than the discharge site.

*The definitions in § 230.3 of the final Guidelines apply to these testing revisions.

Tests are specified to verify that the material is not more contaminated, and, if it is, to provide information to be used in assessing its potential for harm. Comments are solicited on the appropriateness of the proposed tests for this purpose.

Category 3 includes discharges of apparently contaminated dredged material which is to be discharged into contained or confined disposal areas. In this situation, testing is concerned only with the return flow. Where the contained site is itself located in waters of the United States, discharges within it will automatically destroy or dislocate the life there, whether or not the discharged material is contaminated. Thus, there is no need to test the contamination of the material which will remain in the site. The tests for Category 3 are designed to compare the runoff with the receiving water, and, if significant differences are discovered, to assess the potential for harm. Again, comments are sought on the appropriateness of the proposed tests.

Category 4 includes dredged material which, on the basis of the precategorization evaluation, appears to be more contaminated than the discharge site (e.g., not to fall into Category 2) and which will not be confined or contained (e.g., is not in Category 3), and hence presents a potential for environmental harm. Biological tests are prescribed to provide information on the likelihood and extent of harm. Comments are solicited on the appropriateness of the prescribed tests to provide the information needed to evaluate the potential adverse impacts of such discharges.

Under § 230.63, Categories 5 and 6 apply to fill material. If the material is not believed to be contaminated (or the contaminants will not leach out), no testing is required. If there is potential for environmental contamination, the prescribed tests are conducted. When dredged material is used for fill, it should be placed in Categories 1 through 4, not 5 or 6. Comments are solicited on the appropriateness of the categories for fill and the adequacy of the tests for Category 6 for all contaminated, non-dredged fill material, particularly in light of the definition of fill material in the Guidelines published today (40 CFR 230 [FRL 1647–7]) and in the Consolidated Permit Regulations (40 CFR 122.3, 45 FR 33421, May 19, 1980).

Section 230.64 provides a procedure for calculating a mixing zone from the information obtained from testing in § 230.62. Section 230.64 is concerned with the calculation of the mixing zone, not on the evaluation of its acceptability. Where the calculated mixing zone violates a water quality standard (either because the standard prohibits mixing zones or because the calculated mixing zone is outside that allowed under the standard), the discharge will fail to satisfy the requirements of § 230.10(b)(1). Even where the mixing zone meets water quality standards, it may nonetheless contribute to the impact on the environment, and should be weighed with all the other available information in making the determination of significant degradation under § 230.10(c).

Where there are numerical water quality standards for the contaminant involved, the edge of the mixing zone is based on the place where the discharged material is sufficiently diluted to meet ambient water quality standards. Where no numerical water quality exists, the mixing zone perimeter will be calculated based on the results of the water column bioassay. Comments are solicited on the propriety of these two methods for calculating the mixing zone perimeter.

The proposal also calls for bioassay tests where the contaminant levels in the elutriate exceed those of the receiving waters and contaminant levels in the receiving water already exceed applicable standards or criteria, making dilution to those standards impossible. Comments are solicited on whether such tests are necessary or whether such circumstances alone clearly establish the likelihood of significant degradation.

Other points

It is our present intention to have these revised testing provisions go into effect 90 days after their publication as a final rule (probably by the summer of 1981). While the required tests are quite similar to those required under the 1975 regulation, and while we have endeavored to keep to a minimum the occasions when tests will be conducted, we are interested in any comments on the appropriateness of this date.

Under the revised section 404(b)(1) Guidelines, the permitting authority may choose to conduct the tests itself, instead of requiring the applicant to do so. We anticipate this happening when several similar discharges are proposed for a single area, for example. Commenters should bear this in mind in commenting on the potential burden of testing.

Comments objecting to the particular tests specified or suggesting new tests will be more helpful to us if they include reference to (or copies of) pertinent literature.

The Environmental Protection Agency has determined that this document does not constitute a major regulation requiring preparation of an economic impact statement under Executive Order 12044.

The Waterways Experiment Station of the Corps of Engineers has prepared a background document in support of this proposed rule, based on input from both our agencies. Copies are availabe for review in EPA Headquarters Library (Public Information Reference Unit), Room 2404, Waterside Mall, 401 M Street, SW., Washington, D.C. 20460.

Dated: December 12, 1980.

Douglas M. Costle,

Administrator, Environmental Protection Agency.

40 CFR Part 230 is proposed to be amended by revising Subpart G to read as follows:

(1) The authority citation for Part 230 reads as follows:

Authority: Secs. 404, 501 of the Clean Water Act of 1977, 33 U.S.C. 1344(b), 1361(a)).

(2) Subpart G is revised to read as follows:

Subpart G—Evaluation and Testing

Sec.

230.60 Purpose of testing and general approach.
230.61 Initial evaluation of dredged or fill material.
230.62 Detailed evaluation, including possible testing of dredged material.
230.63 Detailed evaluation, including possible testing of fill material.
230.64 Mixing zone determinations.

Authority: Secs. 404, 501 of the Clean Water Act of 1977 (33 U.S.C. 1344(b), 1361(a).

Subpart G—Evaluation and Testing

§ 230.60 Purpose of testing and general approach.

(a) *Purpose.* The purpose of the testing procedures in this Subpart is to provide the permitting authority with technical information required to assess the potential chemical and biological effects of the discharge of dredged or fill material into waters of the United States. The permitting authority must interpret this technical information in light of the specific characteristics of the proposed discharge under evaluation. The technical information and interpretation should be used in making the factual determinations in § 230.11.

(1) Because the testing procedures in this Subpart are done primarily in the laboratory, rather than in the field, and because the tests are only generally predictive of what may actually take place at the discharge site, test results shall not be considered as a sole determinant in making the required Findings of Compliance in § 230.12. Therefore, all test results, including

those that describe sediments with a high potential for significant degradation on aquatic organisms, must be related to other pertinent factors in factual determinations (§ 230.11) before Findings of Compliance are made.

(2) Subpart G addresses only those tests designed to determine the chemical and biological degradation caused by contaminants (specific pollutants designated by the authority of Sections 307(a) and 311 of the Clean Water Act (CWA) and other potentially toxic or hazardous pollutants, referred to in § 230.3(g)), which are believed to be in dredged or fill material. To assess the potential effects of the discharge in the factual determinations, it may be necessary to conduct other analyses (e.g., coliform, BOD, COD, etc.) or to consider physical effects such as burial, turbidity, etc., as discussed in Subpart B.

(3) Where the results of prior evaluations, chemical and biological tests, and scientific research can provide information helpful in reaching a determination, those should be used. Such prior results may make new testing unnecessary. The information used to reach each determination shall be documented, except that where the same information is applicable to more than one determination, it may be documented in one instance and referenced in later determinations.

(b) *General approach.* Chemical and biological testing requirements of this section are designed to provide information for the factual determinations and ecological evaluations and to assist in determining the compatibility of the proposed discharge of dredged or fill material with applicable water quality standards. Except for " other analyses" as stated in § 230.60(a)(2), the permitting authority will require tests only in those cases where there is reason to believe that contaminants are present in forms and amounts that are likely to degrade the aquatic environment, including potential availability to organisms in toxic amounts. This "reason to believe" determination will be made by the permitting authority in the initial evaluation process of § 230.61. Categories have been established to provide the permitting authority with guidance on when testing is needed and what tests can be considered sufficient for the application of the Guidelines.

(1) Permitting authorities and/or U.S. EPA Regional administrators may approve modifications of these procedures or require additional tests to obtain needed information for the determination for a specific situation. The reasons for such modifications shall be fully explained and documented in the Section 404(b)(1) evaluation.

(2) The persistence, stability, and solubility in water and/or other solvents of contaminants as well as the duration and rates of introduction of contaminants and rates of dilution and dispersion after introduction are important considerations in selecting appropriate chemical and biological tests and interpreting the test results.

(3) Tests in this section may be performed on several alternative discharge sites concurrently, if this will aid in obtaining necessary information for making the factual determinations for contaminants.

(4) A technical implementation manual containing acceptable and recommended procedures for implementing the testing requirements of this subpart will be developed and approved jointly by the Administrator, EPA, and the Chief of Engineers. The manual will be reviewed periodically and revised as necessary.

§ 230.61 Initial evaluation of dredged or fill material.

(a) An initial evaluation shall be conducted and documented to determine if there is reason to believe that any dredged or fill material to be discharged into waters of the United States contains any contaminant above background level. This initial evaluation will be used in assigning the proposed discharge to a category for testing. This evaluation should be accomplished with existing data on file with or readily available to the permitting authority; Regional Administrator, EPA; and other public and private sources, as appropriate. Factors which may be considered for the extraction site and, if appropriate, the disposal site, include, but are not limited to, the following:

(1) Potential routes of introduction of specific contaminants. These may be identified by examining maps, aerial photographs, and other graphic materials that show watercourses, surface relief, proximity to tidal movement, private and public roads, location of buildings, agricultural land, municipal and industrial sewage and storm outfalls, etc., or by making field inspections.

(2) Previous tests on the material at the extraction site or on samples from other similar projects in the vicinity, when there are similarities of sources and types of contaminants, water circulation and stratification, accumulation of sediments, general sediment characteristics, and potential impact on the aquatic environment, as long as no known changes have occurred to render the comparisons inappropriate.

(3) The probability of past substantial introduction of contaminants from land runoff (e.g., pesticides).

(4) Spills of toxic substances or substances designated as hazardous under Section 311 of the Clean Water Act (see 40 CFR Part 116).

(5) Substantial introduction of pollutants from industries.

(6) Source and previous use of materials proposed for discharge as fill.

(7) Substantial natural deposits of minerals and other natural substances.

(b) Before the permitting authority concludes that there is no reason to believe that contaminants are present in the discharge material above background levels, he should consider all relevant, reasonably available information which might indicate its presence. However, if there is no information indicating the likelihood of such contamination, the permitting authority may conclude that contaminants are not present above background levels. Examples of documents and records in which data on contaminants may be obtained are:

(1) Report of Pollution Caused Fish Kills (U.S. EPA)

(2) Selected Chemical Spill Listing (U.S. EPA)

(3) Pollution Incident Reporting System (U.S. CG)

(4) Surface Impoundment Assessment (U.S. EPA)

(5) Identification of In-Place Pollutants and Priorities for Removal (U.S. EPA)

(6) Revised Status Report-Hazardous Waste Sites (U.S. EPA)

(7) Hazardous Waste Management Facilities in the United States—1977 (U.S. EPA)

(8) Corps of Engineers Studies of Sediment Pollution

(9) Sediment Tests for Previously Permitted Activities (U.S. CE/District Engineers)

(10) Pesticide Spill Reporting System (U.S. EPA)

(11) STORET (U.S. EPA)

(12) Past 404(b)(1) Evaluations

(13) USGS Water and Sediment Data on Major Tributaries

(14) Pertinent and Applicable Research Reports

(15) NPDES Permit Records

§ 230.62 Detailed evaluation, including possible testing of dredged material.

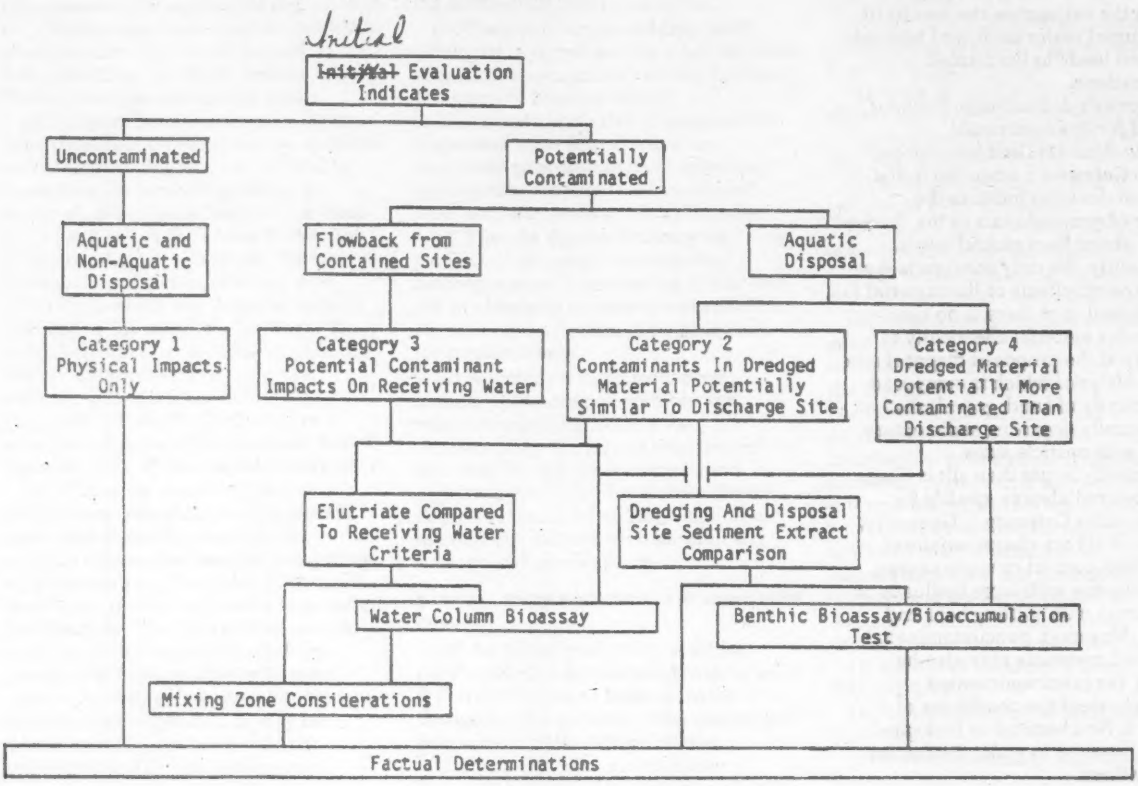
(a) Based on the outcome of the initial evaluation made pursuant to § 230.61, dredged material proposed for discharge will be assigned to one of four categories for its detailed technical evaluation. Figure 1 illustrates how evaluation under these categories leads

to factual determinations required under § 230.11. The following paragraphs describe the categories, the testing (if any) required under each, and how this evaluation leads to the factual determinations.

(b) *Category 1: Discharge Without Potential for Environmental Contamination.* (1) Dredged material falls into Category 1 when the initial evaluation does not indicate the presence of contaminants in the dredged material above background levels. Consequently, the only concern is the direct physical effects of the material to be discharged, and there is no need to compare this material chemically to sediments at the proposed disposal site. Dredged material which is composed predominantly of sand, gravel, shell or other naturally occurring sedimentary material with particle sizes predominantly larger than silt is likely to, but does not always, qualify for inclusion under Category 1. Generally, these materials are characteristic of areas of high current or wave energy, such as streams with large bedloads or coastal areas with shifting bars and channels. However, noncontaminated fine-grained materials may also be shown by the precategorization elevation to meet the conditions of Category 1. No chemical or biological testing is required to make the factual determinations.

BILLING CODE 6560-29-M

Fig. 1. Testing Flow Chart


Initial
~~Initial~~ Evaluation Indicates
Uncontaminated
Potentially Contaminated
Aquatic and Non-Aquatic Disposal
Flowback from Contained Sites
Aquatic Disposal
Category 1 Physical Impacts Only
Category 3 Potential Contaminant Impacts On Receiving Water
Category 2 Contaminants In Dredged Material Potentially Similar To Discharge Site
Category 4 Dredged Material Potentially More Contaminated Than Discharge Site
Elutriate Compared To Receiving Water Criteria
Dredging And Disposal Site Sediment Extract Comparison
Water Column Bioassay
Benthic Bioassay/Bioaccumulation Test
Mixing Zone Considerations
Factual Determinations

N.B. Follow every line out of a box, and if a line branches, follow one or the other branch.

BILLING CODE 6560-25-C

(c) *Category 2: Open Water Discharge with Level of Contamination Similar to the Discharge Site.* Discharges should be assigned to Category 2 when the initial evaluation indicates that contaminants may be present in the dredged material above background levels, but will not be more available than the same contaminants at the disposal site. If this initial evaluation is confirmed by the evaluation described below, the permitting authority may conclude that the discharge will not cause substantive harmful effects to the resident aquatic community other than the physical effects caused by placement of the material. The Category 2 evaluation must consider possible effects on both the benthic component of the aquatic environment under § 230.62(c)(1) and the water-column component under § 230.62(c)(2).

(1) *Sediment assessment.* Chemical extraction tests are used in Category 2 to assess similarities in the potential for long-term leaching and bioavailability of contaminants from the dredged material and discharge site sediments. Research generally indicates that only the fractions of inorganic contaminants which are dissolved in the interstitial water and loosely associated with sediment particles are available to organisms. Since these fractions are measured in a water extract, the appropriate extractant for inorganic contaminants in Category 2 sediment assessments is water. For some organic contaminants, however, extraction with a solvent other than water may be appropriate. Analysis of organic chemicals in sediments is a rapidly advancing field. Analytical methods are being developed for compounds for which none now exist and methods which do exist are subject to rapid obsolescence. Therefore, sediment extraction techniques must be selected for the specific contaminants of concern at the time the need arises. The appropriate extractant for comparing the availability of organic contaminants to organisms from the dredged material and discharge site sediment is a polar or non-polar solvent that effectively extracts the contaminant of concern from the sediment in a reproducible manner.

(i) *Testing protocol.* Chemical analyses shall be conducted on the extracts of the sediment at the dredging and disposal sites. The location and number of sampling stations and replicates shall be designed specifically for the sites being evaluated. Test results shall be used to determine whether the concentrations of those contaminants identified during the § 230.61 evaluation are substantively greater in the dredged material than in the disposal site sediment.

(ii) *Need for additional testing.* Further testing of the impact of contaminants on the benthic component of the environment is required for the factual determinations only when the above comparative analysis indicates substantively greater concentrations of contaminants in the sediments to be discharged than in the disposal site sediments. In such cases, the proposed dredged material will be evaluated further using the benthic assessment protocol for Category 4 under § 230.62(e)(1). For all other situations no further testing for contaminants is required to make the factual determinations of § 230.11 relating to chemical contamination of sediments.

(2) *Water-column assessment.* The potential for short-term water-column impacts is assessed in Category 2 by the standard elutriate test or, under the special circumstance described below, by a water-column bioassay. Generally, the appropriate test is a chemical comparison of the concentration of contaminants in the elutriate of the proposed dredged material with the concentration in the receiving water (See paragraph (c)(1)(i) of this section). These concentration values are then used with the appropriate water quality standard or criterion to calculate a mixing zone.

(i) *Chemical comparison protocol.* Chemical analyses shall be conducted on the receiving water and on the elutriate of the dredged material. The location and number of sampling stations and replicates shall be designed specifically for the dredging and disposal sites being evaluated. Test results shall be used to determine whether, after consideration of mixing, the discharge will substantively increase concentrations of those contaminants identified during the § 320.61 evaluation in solution at the disposal site.

(ii) *Mixing zone determination.* The size of the mixing zone will be calculated pursuant to § 230.64 for the contaminant requiring the greatest dilution volume, as determined from the elutriate analyses, to meet applicable water quality standards, or, if none, Federal water quality criteria established by EPA. The selected standard or criteria shall define the perimeter of the mixing zone.

(iii) *Need for additional testing.* Further testing for contaminants in relation to the water-column component of the environment may be required to make the factual determinations when concentrations in the elutriate of the sediment to be discharged are substantively greater than concentrations in the composite sample of the receiving water and either the calculation of a mixing zone using the appropriate water quality standards or criteria does not provide sufficient information to make an assessment of water-column impacts or the receiving water concentration exceeds the standard or criterion, making dilution to this standard or criterion impossible. Such further testing for water-column effects will consist of a water-column bioassay conducted according to § 230.62(f). No further testing for contaminants is required to make the factual determinations for all other situations, except as provided in § 230.60(b)(1).

(d) *Category 3: Contained, Confined, or Other Disposal Operations of Material with Potential for Contamination of the Water Column Only.* Discharge of dredged material should be assigned to Category 3 when all but the return water, including suspended particles, is confined or contained sufficiently to prevent the long-term availability of contaminants to the aquatic community, and there is reason to believe the concentration of contaminants in the return water are above ambient levels in the receiving water. The Category 3 evaluation consists of consideration of possible impacts to the receiving water column.

(1) *Water-column assessment.* The potential for short-term water-column impacts is assessed in Category 3 by an elutriate test, or under the special circumstance described below, by a water-column bioassay. Generally, the appropriate test is a chemical comparison of the concentration of contaminants in the elutriate of the proposed dredged material with the concentration in the receiving water. These concentration values are then used with the appropriate water quality standards or criteria to calculate a mixing zone. Where retention time within the containment area will be of short duration, the standard elutriate test can be used to estimate the concentration of those contaminants that will be released in the effluent. Where the containment area is managed for maximum solids retention and, consequently, the liquid is retained for long periods, a modified elutriate test should be used, considering biological, chemical and physical changes that may occur in the containment area. Settleability tests should be conducted to simulate the actual retention time.

(2) *Chemical comparison protocol.* Chemical analyses shall be conducted

on the receiving water and on the elutriate of the dredged material. The location and number of sampling stations and replicates shall be designed specifically for the dredging and disposal sites being evaluated. Test results shall be used to determine whether, after consideration of mixing, the discharge will substantively increase concentrations of those contaminants identified during the § 230.61 evaluation in solution at the disposal site.

(3) *Mixing zone determination.* The size of the mixing zone will be calculated pursuant to § 230.64 for the contaminant requiring the greatest dilution volume as determined from the elutriate analyses, to meet applicable water quality standards or, if none, Federal water quality criteria established by EPA. The selected standard or criteria shall define the perimeter of the mixing zone.

(4) *Need for additional testing.* Further testing for contaminants in relation to the water-column component of the environment may be required to make the factual determinations when concentrations in the elutriate of the sediment to be discharged are substantively greater than concentrations in the composite sample of the receiving water and either the calculation of a mixing zone using the appropriate water quality standards or criteria does not provide sufficient information to make an assessment of water-column impacts or the receiving water concentration exceeds the standard or criterion, making dilution to this standard or criterion impossible. Such further testing for water-column effects will consist of a water-column bioassay conducted according to § 230.62(f). No further testing for contaminants is required to make the factual determinations for all other situations, except as provided in § 230.60(b)(1).

(e) *Category 4: Open Water Discharge With Potential for Harm.* Uncontained or unconfined dredged material will be assigned to Category 4 when the initial evaluation indicates the dredged material contains biologically available contaminants in amounts which have the potential for substantive environmental harm. The Category 4 evaluation considers possible effects on both the benthic and water-column components of the aquatic environment.

(1) *Benthic assessment.* The required tests are a benthic bioassay and an investigation of bioaccumulation potential. Due to the infant state-of-the-art in bioaccumulation procedures and the technical uncertainty in the ecological interpretation of bioaccumulation data, the permitting authority may find that such tests or scientific literature for interpretation of results have not been defined in the Corps/EPA implementation manual for specific contaminants. In such cases, the permitting authority may waive the requirement for bioaccumulation tests for these specific contaminants, provided he notifies the Regional Administrator prior to making the factual determinations.

(i) *Selection of appropriately sensitive organisms.* The sensitivity of these procedures is dependent primarily on the selection of appropriate species. The species should be selected from appropriately sensitive aquatic organisms as determined by the permitting authority. A minimum of one benthic and one epibenthic species shall be used for bioassays. At least one benthic or epibenthic species of sufficient size with limited mobility, and with a propensity for accumulating the identified contaminants, shall be used in bioaccumulation tests if any are conducted. The species designated for bioaccumulation tests may be one or more of those used in the bioassay.

(ii) *Benthic bioassay protocol.* Results of a benthic bioassay will be used to compare survival in sediment from the dredging site with survival in a sedimentologically similar reference substrate from within or near the disposal site. If survival of the test organisms is similar, then no increased toxic effects to the benthic community should result from the discharge. Should statistically significant decreases in survival in the dredged material be observed, then the permitting authority will assess the substantive effects of the contaminated discharge in making the factual determinations.

(iii) *Bioaccumulation protocol.* The bioaccumulation potential of those contaminants identified in the initial evaluation procedures of § 230.61 or in previous tests shall be assessed by comparing the concentrations in the tissues of the designated organism exposed to the sediments to be dredged with the concentrations in the tissues in the same species exposed to a sedimentologically similar reference substrate from within or near the disposal site. Bioaccumulation potential is indicated when the concentrations of the contaminants in the tissue of the organisms exposed to the sediments to be discharged are significantly greater statistically than those concentrations in the tissues of the organisms exposed to the reference substrate. Where there is bioaccumulation potential, the permitting authority must assess the substantive effects of the contaminated discharge in making the factual determinations.

(A) A comparative field assessment will be used when dredged material from the dredging site in question has been discharged at the proposed disposal site during previous activities and the § 230.61 evaluation indicates that the dredged material has not become more contaminated since the last disposal operation; or

(B) When such a field assessment is not practicable, assessment will be performed using animals exposed in the laboratory bioassay protocol of § 230.62(e)(1)(ii).

(iv) *Need for additional testing.* No further benthic bioassay or bioaccumulation potential testing is required to make the factual determinations.

(2) *Water-column assessment.* The required test is a water-column bioassay under § 230.62(f). The mixing zone must be considered in interpreting the test results and making the factual determinations.

(f) *Water-column bioassay protocol.* An acute bioassay will be used to compare survival in the unfiltered elutriate from the material to be dredged with survival in an unfiltered composite sample representing the entire water-column at the disposal site. The location and number of sampling stations and replicates shall be designed specifically for the dredging and disposal sites being evaluated. Test results shall be used to determine whether, after consideration of mixing, the discharge will cause a substantive increase in toxic effects in the water-column at the disposal site. If the survival of test organisms is similar in the elutriate and receiving water, then increased toxic effects in the water-column should not result from the discharge. Should statistically significant decreases in survival in the elutriate be observed, then the mixing zone will be calculated based on the 96-hour LC 50 of the elutriate from the bioassay results.

(1) *Selection of appropriately sensitive organisms.* The sensitivity of the water-column bioassay is dependent primarily on the selection of appropriate species. Test species should be representative of animals in the aquatic community at the site of the proposed discharge. Test organisms should be selected from appropriately sensitive aquatic species. A minimum of one vertebrate and one invertebrate aquatic species shall be used.

(2) *Mixing zone determination.* The size of the mixing zone will be calculated pursuant to §230.64 such that the perimeter is defined by 0.01 of the

lowest 96-hour LC 50 observed in the bioassay.

(3) *Need for additional testing.* No further testing for contaminants in relation to the water-column component of the environment is required to make the factual determinations, except as provided in § 230.60(b)(1).

§ 230.63 Detailed evaluation, including possible testing, of fill material.

Based on the outcome of the initial evaluation made pursuant to § 230.61, natural or man-made material from upland sources proposed for discharge as fill will be assigned to one of two categories for technical evaluation. Dredged material used as fill will be evaluated under § 230.62.

(a) *Category 5: Discharge without Potential for Environmental Contamination.* Discharge of fill material falls into Category 5 when the initial evaluation does not indicate the presence of contaminants in the fill material above background levels or when such contaminants will be adequately contained to prevent leaching and/or erosion. No chemical or biological testing is required to make the factual determinations.

(b) *Category 6: Discharge of Fill Material with Potential for Environmental Contamination.* Discharge of fill material falls into Category 6 when the § 230.61 initial evaluation indicates contaminants may be present in the fill material above background levels and the permitting authority determines that there is a potential for leaching. The water leachate test is appropriate.

(1) *Testing protocol.* Samples of the fill material will be subjected to a water leachate test. From this testing the permitting authority shall determine whether the concentration of each contaminant identified during the § 230.61 evaluation is substantially greater than the appropriate existing Federal or State water quality standard. No dilution factor or mixing zone determination shall be considered.

(2) *Need for additional testing.* No further testing for contaminants of concern is required to make the factual determinations, except as provided in § 230.60(b)(1).

§ 230.64 Mixing zone determinations.

A limited mixing zone, serving as a zone of initial dilution and dispersion in the immediate vicinity of the discharge point for dredged material, is allowed unless specifically prohibited by applicable water quality standards. Because water quality standards regarding concentrations of contaminants may be exceeded within the mixing zone, limitations must be placed on its size, shape, and location. Also, factors that will contribute to water degradation other than unacceptable levels of contaminants must be limited. The permitting authority shall consider each contaminant identified as present within the dredged material in light of its potential effect upon any element of water quality prescribed in applicable water quality standards or criteria. Such standards or criteria may establish specific numerical limitations upon the permissible concentration of the contaminant itself and/or upon the extent to which the discharge may alter a specified parameter of water quality after interaction of the contaminant with ambient water (for example, BOD or DO).

(a) *Mixing zone calculations.* The perimeter of the mixing zone shall be defined by the applicable water quality standard of the contaminant requiring the greatest dilution volume, or by 0.01 of the lowest 96-hour LC 50 when a water-column bioassay has been conducted.

(1) One of the following methods (provided in order of preference) shall be used to determine the volume and conformation of the zone required to achieve dilution and dispersal of contaminants to numerical limitations specified in Federal or State water quality standards or to 0.01 of the lowest 96-hour LC 50, as indicated above.

(i) When field data on the proposed discharge are adequate to predict the initial dispersion and diffusion of the discharge plume, such data shall be used; or

(ii) When field data on the dispersion and diffusion of a discharge with similar characteristics are available, these data shall be used in conjunction with an appropriate mathematical model (acceptable to the permitting authority) to make the required determination; or

(iii) When the above methods are impractical, due to inadequate field data or the unavailability of an appropriate mathematical model, the zone of dilution and dispersion may be estimated by assuming particular geometrical shapes for the disposal plume.

(2) Factors important in determining the shape and trajectory of the discharge plume and the volume of the zone of dilution and dispersal include the following:

(i) Surface area and water depth at the disposal site;

(ii) Current velocity, direction and variability at the disposal site;

(iii) Degree of turbulence;

(iv) Stratification attributable to causes including but not limited to obstructions, salinity, or density profiles at the disposal site;

(v) Discharge vessel speed and direction if appropriate;

(vi) Time to empty vessel or length of discharge;

(vii) Ambient concentration of contaminants;

(viii) Dredged material characteristics, particularly concentrations of constituents, amount of material, types of material (sand, silt, clay, etc.), and settling velocities;

(ix) Rate of discharge;

(x) Number of discharge actions per unit of time; and

(xi) Other characteristics of the disposal site that affect the rates and patterns of mixing.

[FR Doc. 80-40002 Filed 12-23-80; 8:45 am]

BILLING CODE 6560-29-M